

## Freeform Search

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<b>Database:</b>	US Pre-Grant Publication Full-Text Database
	<b>US Patents Full-Text Database</b>
	US OCR Full-Text Database
	EPO Abstracts Database
	JPO Abstracts Database
	Derwent World Patents Index
	IBM Technical Disclosure Bulletins

<b>Term:</b>	(butyl carbitol or butyl cellosolve)with dye
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<b>Display:</b>	<input type="text" value="10"/> Documents in Display Format:	<input type="text" value="KWIC"/> Starting with Number	<input type="text" value="1"/>
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<b>Generate:</b>	<input type="radio"/> Hit List	<input checked="" type="radio"/> Hit Count	<input type="radio"/> Side by Side	<input type="radio"/> Image
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### Search History

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**DATE:** Friday, August 06, 2004  
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<u>Set</u> <u>Name</u> side by side	<u>Query</u>	<u>Hit</u> <u>Count</u>	<u>Set</u> <u>Name</u> result set
	<i>DB=USPT; PLUR=YES; OP=ADJ</i>		
<u>L7</u>	(butyl carbitol or butyl cellosolve)with dye same polyester	4	<u>L7</u>
<u>L6</u>	(butyl carbitol or butyl cellosolve)with dye same polycarbonate	0	<u>L6</u>
<u>L5</u>	(butyl carbitol or butyl cellosolve)with dye with polycarbonate	0	<u>L5</u>
<u>L4</u>	(butyl carbitol or butyl cellosolve)same disperse adj (red or black or blue or green)	2	<u>L4</u>
<u>L3</u>	(butyl carbitol or butyl cellosolve)with disperse adj (red or black or blue or green)	0	<u>L3</u>
<u>L2</u>	(butyl carbitol or butyl cellosolve)with disperse dye	0	<u>L2</u>
<u>L1</u>	(butyl carbitol or butyl cellosolve)with dye	120	<u>L1</u>

END OF SEARCH HISTORY

=> d hist

(FILE 'HOME' ENTERED AT 07:15:31 ON 29 JUL 2004)

FILE 'REGISTRY' ENTERED AT 07:18:36 ON 29 JUL 2004

L1 0 S BUTYLCARBITOL/CN  
L2 1 S BUTYL CARBITOL/CN

FILE 'CAPLUS' ENTERED AT 07:19:47 ON 29 JUL 2004

L3 0 S L1 AND DYE  
L4 230 S L2 AND DYE  
L5 27 S L4 AND (POLYESTER OR POLYCARBONATE OR ACRYLATE)

2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN

RN 112-34-5 REGISTRY

CN Ethanol, 2-(2-butoxyethoxy)- (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN 2-(2-Butoxyethoxy)ethanol

CN 3,6-Dioxa-1-decanol

CN BDG

CN BDG-NS

CN Butadigol

CN Butoxyethoxyethanol

CN **Butyl Carbitol**

CN Butyl diglycol

CN Butyl Diglysol

CN Butyl digol

CN Butyl dioxitol

CN Butyl Oxitol glycol ether

CN Butysenol 20P

CN Diethylene glycol butyl ether

CN Diethylene glycol mono-n-butyl ether

CN Diethylene glycol monobutyl ether

CN Diethylene glycol n-butyl ether

CN Diglycol monobutyl ether

CN Dowanol DB

CN Ektasolve DB

CN Ethanol, 2,2'-oxybis-, monobutyl ether

CN Hisolve DB

CN K 50181

CN n-Butyl carbitol

CN NBC

CN NBC (solvent)

CN NSC 407762

CN O-Butyl diethylene glycol

CN Poly-Solv DB

FS 3D CONCORD

DR 210818-08-9

MF C8 H18 O3

CI COM

LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHM, CSNB, DETHERM\*, DIPPR\*, EMBASE, HODOC\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*, MSDS-OHS, NIOSHTIC, PDLCOM\*, PIRA, PROMT, RTECS\*, SPECINFO, TOXCENTER, ULIDAT, USPAT2, USPATFULL, VTB

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

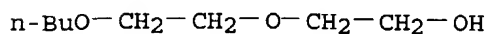
DT.CA Caplus document type: Conference; Dissertation; Journal; Patent; Report

RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.P Roles for non-specific derivatives from patents: ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)

RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.NP Roles for non-specific derivatives from non-patents: ANST (Analytical study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); RACT (Reactant or reagent); USES (Uses)



AN 1986:52204 CAPLUS  
 DN 104:52204  
 TI Inks for transparency films  
 IN Strebel, Elwood L.  
 PA Minnesota Mining and Manufacturing Co., USA  
 SO Eur. Pat. Appl., 24 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 148615	A1	19850717	EP 1984-308821	19841217
	EP 148615	B1	19890215		
	R: CH, DE, FR, GB, IT, LI				
	AU 8435976	A1	19850718	AU 1984-35976	19841128
	AU 575092	B2	19880721		
	JP 60158278	A2	19850819	JP 1985-1981	19850109
PRAI	US 1984-569674		19840110		

AB Marking-pen inks with drying time (on liquid-sorbent transparent substrates) <2 min and open-cap life  $\geq 1$  h comprise dyes with affinity for liquid-sorbent media and vehicles having b.p.  $\geq 150^\circ$  containing solvents for the dyes. Thus, an ink containing Acetosol Fire Red 3GL 2, Ethyl Cellosolve 3.33, Butyl Carbitol 1.67, n-hexanol 3, HCONH<sub>2</sub> 2, rosin ester 0.6, and polydimethylsiloxane (wetting agent) 0.06 part had Brookfield viscosity 13.3 cP, drying time on gelatin-coated **polyester** film 25 s, and open-cap life 2 h.

ST marking ink absorbent transparency volatility; sorbent transparency marking ink volatility; solvent dye transparency marking ink

IT 110-80-5 111-90-0 112-34-5 2390-60-5 61725-69-7  
 100091-17-6 100091-18-7 100091-98-3

RL: USES (Uses)

(inks containing, for absorbent transparencies, with long open-cap life and short drying time)

ANSWER 15 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1989:194812 CAPLUS

DN 110:194812

TI Writing ink compositions containing resin-pigment composite particles

IN Yoshida, Akio; Sakai, Naoyuki; Hosoda, Toru

PA Dainichiseika Color and Chemicals Mfg. Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63218778	A2	19880912	JP 1987-52109	19870309
PRAI	JP 1987-52109		19870309		

AB The title compns. comprise colorants, dispersants, and an aqueous medium, with the colorants present as composites of pigments and spherical resin particles for enhanced dispersion stability. The composites are present as small pigment particles sticking to a large resin particle, small resin particles sticking to a large pigment particle, or a pigment particle and a resin particle of roughly equal size sticking together. A 30:20:20:15:15 Me methacrylate-hydroxyethyl methacrylate-Bu acrylate-N,N-dimethylaminoethyl methacrylate-methacrylic acid copolymer as water-soluble dispersant was dissolved in a 50:50 Butyl Carbitol-iso-PrOH mixture to 50% concentration; 6 parts of the solution was mixed with

H2O (55) HN(CH<sub>2</sub>CH<sub>2</sub>OH)<sub>2</sub> 2.0, and a 1:1 polystyrene-yellow azo(dye) composite 20 parts in a ball mill for .apprx.20 h, diluted with EtOH 10, Butyl Cellosolve 10, H2O 27, and urea 10 parts to 14.3% particle content, dispersed further for 30 min, and centrifuged to remove coarse particles. The resulting ink was stable when kept in a closed container at 50° for 3 mo and wrote well without clogging.

IT 33058-70-7, Butyl methacrylateethyl acrylate-methacrylic acid-styrene copolymer 37353-75-6D, Bisphenol A-propylene oxide adduct, condensation products with maleated dehydrated castor-oil fatty acids 80512-20-5, Butyl acrylate-N,N-dimethylaminoethyl methacrylate-hydroxyethyl methacrylate-methacrylic acidmethyl methacrylate copolymer

RL: USES (Uses)

(dispersants, in writing inks)

IT 64-17-5, Ethanol, uses and miscellaneous 67-63-0, Isopropyl alcohol, uses and miscellaneous 107-21-1, Ethylene glycol, uses and miscellaneous 111-42-2, Diethanolamine, uses and miscellaneous 111-76-2, Butyl Cellosolve 111-77-3, Methyl Carbitol 112-34-5, Butyl Carbitol

RL: USES (Uses)

(writing inks containing)

NSWER 12 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1998:334789 CAPLUS

DN 129:68954

TI Oily **dye** inks

IN Murai, Akira; Makino, Tomonari; Asahino, Kinya

PA Shachihata Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 10140055	A2	19980526	JP 1996-313105	19961107
PRAI	JP 1996-313105		19961107		
TI	Oily <b>dye</b> inks				
AB	Title inks contain ethylene glycol-propylene glycol block copolymer ether with glycerol, dyes, and $\geq 1$ resin from <b>acrylate</b> resin powders or aqueous solns., and waterborne <b>acrylate</b> resin colloid suspensions or emulsions.				
ST	oily <b>dye</b> ink; PEO polyoxypropylene copolymer glycerol ether ink; acrylic resin <b>dye</b> ink; <b>acrylate</b> <u>waterborne</u> suspension emulsion ink				
IT	Dyes Inks (oily <b>dye</b> ink from waterborne acrylic resin, dyes, and ethylene glycol-propylene glycol block copolymer ether with glycerol)				
IT	Polyoxyalkylenes, uses RL: TEM (Technical or engineered material use); USES (Uses) (oily <b>dye</b> ink from waterborne acrylic resin, dyes, and ethylene glycol-propylene glycol block copolymer ether with glycerol)				
IT	Acrylic polymers, uses RL: TEM (Technical or engineered material use); USES (Uses) (waterborne; oily <b>dye</b> ink from waterborne acrylic resin, dyes, and ethylene glycol-propylene glycol block copolymer ether with glycerol)				
IT	(112-34-5)	143-22-6	1325-86-6, C.I.Solvent Blue 5	12237-22-8, C.I.Solvent Black 27	12239-74-6, C.I.Solvent Red 124 25085-34-1, Acrylic acid-styrene copolymer
	RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (oily <b>dye</b> ink from waterborne acrylic resin, dyes, and ethylene glycol-propylene glycol block copolymer ether with glycerol)				
IT	35209-54-2, Joncryl 61	107498-00-0	121630-64-6, Carboset XL-30	RL: TEM (Technical or engineered material use); USES (Uses) (oily <b>dye</b> ink from waterborne acrylic resin, dyes, and ethylene glycol-propylene glycol block copolymer ether with glycerol)	

ANSWER 11 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1999:74400 CAPLUS

DN 130:140644

TI Urethane foam-based ink support and its ink cartridge and the production method therefor

IN Ouki, Yasuhiro

PA Seiko Epson Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11020192	A2	19990126	JP 1998-119349	19980428
PRAI	JP 1997-117326		19970507		

OS MARPAT 130:140644

AB Title urethane-based foam for supporting of ink consisting of at least dye, glycol, glycol ether and water was prepared by mixing of polyester-polyol and polyisocyanate main components with catalyst select from organic metallic compds. with general structural formulas of  $(R1COO)nMe$  ( $n = 1-4$ ,  $R1 = \text{alkyl}$ ,  $Me = K, Na, Ca, Fe, Mg, Hg, Ni, Pb, Co, Zn, Cr, Al, Sn, V, Ti$ ), and/or  $R2-Me-R3$  ( $R2, R3 = \text{alkyl}$ ,  $Me = Zn, Si, Sn, Pb, Sb$ ) 0.01-0.1 part and foaming agent, then foaming of the mixture Thus, an ink cartridge was prepared by compression filling of the urethane foam supports prepared from glycerin-poly(propylene glycol) 100, TID 100, stannous octanoate 0.08, N-ethylmorpholine 0.6, water 3.5, and SF 2961 1 part into the magenta chamber, cyan-chamber and yellow chamber of the lower-case, and heat-welding of the upper-case with the lower-case to give an ink cartridge, then injecting of ink composition 15 g into each ink support via ventilation holes by syringe resp., then keeping the ink cartridge at room temperature for 1 day, showing good printing image and the decrease of ink discharge quality by non-volatile impurity was prevented.

IT 56-81-5, Glycerin, uses 111-46-6, Diethylene glycol, uses 112-27-6, Triethylene glycol 112-34-5, Diethylene glycol monobutyl ether 143-22-6, Triethylene glycol monobutyl ether 2650-18-2, Acid Blue 9 3520-42-1, Acid Red 52 12222-04-7, Direct Blue 199 12222-51-4, Direct Red 227 50925-42-3, Direct Yellow 86 61968-26-1, Direct Yellow 132 163294-23-3, Projet fast Black 2

RL: TEM (Technical or engineered material use); USES (Uses)

(ink composition containing; preparation and properties of urethane foam-based ink support and cartridge)

ANSWER 9 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:68525 CAPLUS

DN 132:124294

TI Sublimation transfer ink jet recording method and ink composition for use therein

IN Nakamura, Hiroto; Komatsu, Hidehiko; Owatari, Akio

PA Seiko Epson Corporation, Japan

SO PCT Int. Appl., 25 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000004103	A1	20000127	WO 1999-JP3807	19990714
	W: JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1020499	A1	20000719	EP 1999-929840	19990714
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	US 6409330	B1	20020625	US 2000-508225	20000308
	JP 2004042604	A2	20040212	JP 2003-102906	20030407
PRAI	JP 1998-199144	A	19980714		
	JP 1999-107186	A	19990414		
	JP 1999-555210	A3	19990714		
	WO 1999-JP3807	W	19990714		

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB An ink comprises a thermally transferable dye, a glycol ether, an acetylene glycol-based surfactant, and water, has good discharge stability, and gives no blotting in an image. Thus, an ink contained Sumikaron Yellow SE 5G 5.0, diethylene glycol mono-Bu ether 8.0, diethylene glycol monohexyl ether 3.0, polyethylene glycol nonylphenyl ether sulfate ammonium salt 1.0, glycerin 6.0, Surfynol 465 0.8, triethanolamine 0.8, EDTA 0.05 parts, and H2O.

IT Textiles

(cotton-polyester; transfer printing jet inks containing sublimable dyes and glycol ethers and acetylene glycol-based surfactants)

IT Acetate fibers, uses

Polyamide fibers, uses

Polyester fibers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(fabrics; transfer printing jet inks containing sublimable dyes and glycol ethers and acetylene glycol-based surfactants)

IT 256221-58-6, Miketon Polyester Yellow 4G

RL: TEM (Technical or engineered material use); USES (Uses)

(Miketon Polyester Yellow 4G; transfer printing jet inks containing sublimable dyes and glycol ethers and acetylene glycol-based surfactants)

IT 112-34-5, Diethylene glycol monobutyl ether 112-59-4, Diethylene glycol monohexyl ether 143-22-6, Triethylene glycol monobutyl ether 9038-95-3, Ethylene oxide-propylene oxide copolymer monobutyl ether 18912-81-7, Diethylene glycol monopentyl ether 25961-89-1, Triethylene glycol monohexyl ether 25961-91-5, Triethylene glycol monopentyl ether 29387-86-8, Propylene glycol monobutyl ether 35884-42-5, Dipropylene glycol monobutyl ether 52232-09-4, Ethylene oxide-propylene oxide copolymer monohexyl ether 149433-96-5

RL: NUU (Other use, unclassified); USES (Uses)

(transfer printing jet inks containing sublimable dyes and glycol ethers an

Date 2

8/7/00  
1/2/00



=> d bib 15 1-27

L5 ANSWER 1 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 2004:351869 CAPLUS  
DN 140:359356  
TI Liquid fabric softener compositions with good light resistance and storage stability  
IN Miyahara, Takehiko; Kawaguchi, Tadashi; Nihei, Shuichi; Nomura, Hirotake  
PA Lion Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 37 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004131895	A2	20040430	JP 2002-299516	20021011
PRAI	JP 2002-299516		20021011		

L5 ANSWER 2 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 2003:776878 CAPLUS  
DN 139:277790  
TI Process for dyeing plastic articles  
IN Pyles, Robert A.; Archey, Rick L.  
PA Bayer Polymers LLC, USA  
SO U.S. Pat. Appl. Publ., 5 pp.  
CODEN: USXXCO  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003182738	A1	20031002	US 2002-106788	20020326
	US 6733543	B2	20040511		
	WO 2003083207	A1	20031009	WO 2003-US8811	20030321
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	US 2002-106788	A	20020326		
OS	MARPAT 139:277790				

L5 ANSWER 3 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 2003:371661 CAPLUS  
DN 138:390526  
TI Odor masking compositions containing fragrant substances for hair cosmetics  
IN Kawasaki, Kiyomitsu  
PA Japan  
SO Jpn. Kokai Tokkyo Koho, 81 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 2003137758 A2 20030514 JP 2001-330894 20011029  
 PRAI JP 2001-330894 20011029

L5 ANSWER 4 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:923929 CAPLUS

DN 136:55371

TI Ink-jet recording ink, ink-jet recording ink set, recording method, print, and ink-jet recording apparatus

IN Yatake, Masahiro; Miyabayashi, Toshiyuki; Hayashi, Hiroko

PA Seiko Epson Corporation, Japan

SO PCT Int. Appl., 163 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001096483	A1	20011220	WO 2001-JP4787	20010606
	W: JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	EP 1295916	A1	20030326	EP 2001-938546	20010606
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	US 2003106462	A1	20030612	US 2002-48909	20020618
PRAI	JP 2000-170921	A	20000607		
	JP 2000-170922	A	20000607		
	JP 2000-170923	A	20000607		
	JP 2000-170924	A	20000607		
	JP 2000-170925	A	20000607		
	JP 2000-170926	A	20000607		
	JP 2000-170927	A	20000607		
	JP 2000-170928	A	20000607		
	JP 2000-170929	A	20000607		
	JP 2000-170931	A	20000607		
	JP 2000-170932	A	20000607		
	JP 2000-170934	A	20000607		
	JP 2000-170935	A	20000607		
	JP 2000-170936	A	20000607		
	WO 2001-JP4787	W	20010606		

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 5 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:19174 CAPLUS

DN 134:72870

TI Printing fabrics in ombre patterns by printing fabrics with compositions containing glycol ethers as dye permeation aids and heat-treating the fabrics for color development of the dyes applied to the fabrics

IN Morishima, Fumihiro

PA Chuo Giken Kogyo K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001003278	A2	20010109	JP 1999-176100	19990622
PRAI	JP 1999-176100		19990622		

L5 ANSWER 6 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:911358 CAPLUS  
 DN 134:58045  
 TI Ink-jet printing ink compositions  
 IN Shawcross, Andrew Paul; Holbrook, Mark; Ewing, Paul Nicholas; Kenworthy, Mark; MacFaul, Philip  
 PA Avecia Limited, UK  
 SO PCT Int. Appl., 30 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000078876	A1	20001228	WO 2000-GB2280	20000612
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1194490	A1	20020410	EP 2000-940527	20000612
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2003503535	T2	20030128	JP 2001-505627	20000612
PRAI	GB 1999-14544	A	19990623		
	WO 2000-GB2280	W	20000612		

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 7 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:612187 CAPLUS  
 DN 133:209236  
 TI Ink-jet printing inks containing disperse dyes for printing fabrics with high colorfastness and high black color yield and ink-jet printing fabrics using the inks and printed fabrics therefrom  
 IN Suzuki, Shinichi; Matsumoto, Kazumasa  
 PA Konica Co., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000239979	A2	20000905	JP 1999-45392	19990223
PRAI	JP 1999-45392		19990223		

L5 ANSWER 8 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:421242 CAPLUS  
 DN 133:60210  
 TI Ink compositions and their use in ink jet printing  
 IN Holbrook, Mark; Buckley, Susan Louise; Griffiths, Ann Elizabeth  
 PA Avecia Ltd., UK  
 SO PCT Int. Appl., 36 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000036030	A1	20000622	WO 1999-GB4061	19991203

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

GB 2361009 A1 20011010 GB 2001-12969 19991203  
 PRAI GB 1998-27291 A 19981212  
 WO 1999-GB4061 W 19991203  
 RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 9 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:68525 CAPLUS  
 DN 132:124294  
 TI Sublimation transfer ink jet recording method and ink composition for use therein  
 IN Nakamura, Hiroto; Komatsu, Hidehiko; Owatari, Akio  
 PA Seiko Epson Corporation, Japan  
 SO PCT Int. Appl., 25 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000004103	A1	20000127	WO 1999-JP3807	19990714
	W: JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1020499	A1	20000719	EP 1999-929840	19990714
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	US 6409330	B1	20020625	US 2000-508225	20000308
	JP 2004042604	A2	20040212	JP 2003-102906	20030407
PRAI	JP 1998-199144	A	19980714		
	JP 1999-107186	A	19990414		
	JP 1999-555210	A3	19990714		
	WO 1999-JP3807	W	19990714		

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 10 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:3303 CAPLUS  
 DN 132:37083  
 TI 1,3,5-trihydroxy-2,4,6-triazobenzene dyes + mixtures, compositions thereof with a water-dissipatable polymer, and ink jet inks based thereon  
 IN Shawcross, Andrew Paul; Wright, Gavin; Holbrook, Mark; Meyrick, Barry Huston  
 PA Zeneca Limited, UK; ZSC Specialty Chemicals UK Limited; Avecia Limited  
 SO Brit. UK Pat. Appl., 26 pp.  
 CODEN: BAXXDU  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2335432	A1	19990922	GB 1999-5325	19990309
	GB 2335432	B2	20030618		
	US 6028180	A	20000222	US 1999-272175	19990318
PRAI	GB 1998-5782	A	19980319		

OS MARPAT 132:37083

L5 ANSWER 11 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1999:74400 CAPLUS  
DN 130:140644  
TI Urethane foam-based ink support and its ink cartridge and the production  
method therefor  
IN Ouki, Yasuhiro  
PA Seiko Epson Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11020192	A2	19990126	JP 1998-119349	19980428
PRAI	JP 1997-117326		19970507		

OS MARPAT 130:140644

L5 ANSWER 12 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1998:334789 CAPLUS  
DN 129:68954  
TI Oily dye inks  
IN Murai, Akira; Makino, Tomonari; Asahino, Kinya  
PA Shachihata Industrial Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10140055	A2	19980526	JP 1996-313105	19961107
PRAI	JP 1996-313105		19961107		

L5 ANSWER 13 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1997:631650 CAPLUS  
DN 127:249509  
TI Fluorescent red and magenta waterfast ink composition for jet printing  
postage  
IN Auslander, Judith D.; Higashiyama, Shunichi  
PA Pitney Bowes Inc., USA  
SO Can. Pat. Appl., 28 pp.  
CODEN: CPXXEB  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CA 2192142	AA	19970612	CA 1996-2192142	19961205
	US 5681381	A	19971028	US 1995-570140	19951211
	EP 779348	A2	19970618	EP 1996-119878	19961211
	EP 779348	A3	19980128		
	EP 779348	B1	20010808		
	R: CH, DE, FR, GB, IT, LI, SE				
	JP 09291246	A2	19971111	JP 1996-331203	19961211
PRAI	US 1995-570140	A	19951211		

L5 ANSWER 14 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1990:45774 CAPLUS  
DN 112:45774  
TI Ink-jet recording method  
IN Nagai, Kiyofumi; Murakami, Kakuji; Shimada, Masaru

PA Ricoh Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01141085	A2	19890602	JP 1987-299286	19871127
PRAI	JP 1987-299286		19871127		

L5 ANSWER 15 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1989:194812 CAPLUS  
DN 110:194812  
TI Writing ink compositions containing resin-pigment composite particles  
IN Yoshida, Akio; Sakai, Naoyuki; Hosoda, Toru  
PA Dainichiseika Color and Chemicals Mfg. Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63218778	A2	19880912	JP 1987-52109	19870309
PRAI	JP 1987-52109		19870309		

L5 ANSWER 16 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1986:52204 CAPLUS  
DN 104:52204  
TI Inks for transparency films  
IN Strebel, Elwood L.  
PA Minnesota Mining and Manufacturing Co., USA  
SO Eur. Pat. Appl., 24 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 148615	A1	19850717	EP 1984-308821	19841217
	EP 148615	B1	19890215		
	R: CH, DE, FR, GB, IT, LI				
	AU 8435976	A1	19850718	AU 1984-35976	19841128
	AU 575092	B2	19880721		
	JP 60158278	A2	19850819	JP 1985-1981	19850109
PRAI	US 1984-569674		19840110		

L5 ANSWER 17 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1978:512187 CAPLUS  
DN 89:112187  
TI Dyeing and printing sheets  
IN Schaefer, Karl; Walz, Klaus; Kuehnelt, Werner; Nordmeyer, Heinrich  
PA Bayer A.-G., Fed. Rep. Ger.  
SO Ger. Offen., 29 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2700150	A1	19780713	DE 1977-2700150	19770104
	JP 53086881	A2	19780731	JP 1977-157509	19771228
	GB 1562047	A	19800305	GB 1977-54297	19771230

PRAI DE 1977-2700150 19770104

L5 ANSWER 18 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1978:476290 CAPLUS  
DN 89:76290  
TI Transfer printing process  
IN Kuth, Robert  
PA Bayer A.-G., Fed. Rep. Ger.  
SO Ger. Offen., 8 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 2653615	A1	19780615	DE 1976-2653615	19761125
	DE 2653615	B2	19780629		
	DE 2653615	C3	19790222		
	NL 7712081	A	19780529	NL 1977-12081	19771102
	JP 53067524	A2	19780616	JP 1977-139566	19771122
	JP 55015311	B4	19800422		
	GB 1554524	A	19791024	GB 1977-48763	19771123
	BE 861147	A1	19780524	BE 1977-182888	19771124
	BR 7707807	A	19780613	BR 1977-7807	19771124
	FR 2372035	A1	19780623	FR 1977-35362	19771124
	FR 2372035	B1	19810320		
PRAI	DE 1976-2653615		19761125		
	DE 1977-2709754		19770305		

L5 ANSWER 19 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1978:425961 CAPLUS  
DN 89:25961  
TI Dyeing of patterns on textiles  
IN Schaefer, Karl; Walz, Klaus; Kuehnelt, Werner; Nordmeyer, Heinrich  
PA Bayer A.-G., Fed. Rep. Ger.  
SO Ger. Offen., 36 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 2646823	A1	19780420	DE 1976-2646823	19761016
	GB 1559627	A	19800123	GB 1977-15048	19770412
	JP 52128477	A2	19771027	JP 1977-42740	19770415
	FR 2348311	A1	19771110	FR 1977-11520	19770415
PRAI	DE 1976-2616993		19760417		
	DE 1976-2646823		19761016		

L5 ANSWER 20 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 1978:122620 CAPLUS  
DN 88:122620  
TI Dyeing of flat structures  
IN Schaefer, Karl; Walz, Klaus; Kuehnelt, Werner; Nordmeyer, Heinrich  
PA Bayer A.-G., Fed. Rep. Ger.  
SO Ger. Offen., 36 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 2616993	A1	19771027	DE 1976-2616993	19760417
	GB 1559627	A	19800123	GB 1977-15048	19770412

	JP 52128477	A2	19771027	JP 1977-42740	19770415
	FR 2348311	A1	19771110	FR 1977-11520	19770415
PRAI	DE 1976-2616993		19760417		
	DE 1976-2646823		19761016		

L5 ANSWER 21 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1977:469678 CAPLUS  
 DN 87:69678  
 TI Dyeing of textile fabrics  
 IN Kuehnelt, Werner; Nordmeyer, Heinrich; Schaefer, Karl  
 PA Bayer A.-G., Fed. Rep. Ger.  
 SO Ger. Offen., 18 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 2554923	A1	19770616	DE 1975-2554923	19751206
	JP 52070183	A2	19770610	JP 1976-144840	19761203
	CA 1103862	A1	19810630	CA 1976-267139	19761203
	FR 2333890	A1	19770701	FR 1976-36715	19761206
	FR 2333890	B1	19800801		
	CH 626220	A3	19811113	CH 1976-15317	19761206
	CH 626220	B	19820514		
PRAI	DE 1975-2554923		19751206		

L5 ANSWER 22 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1976:19062 CAPLUS  
 DN 84:19062  
 TI Dyeing of **polyester** fibers with cationic dyes  
 IN Kanuma, Tadao; Yonemura, Minoru  
 PA Asahi Chemical Industry Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 50082379	A2	19750703	JP 1973-131660	19731126
	JP 56038713	B4	19810908		
PRAI	JP 1973-131660		19731126		

L5 ANSWER 23 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1973:480255 CAPLUS  
 DN 79:80255  
 TI Dyeing napped fabrics of water-swellable cellulose fibers  
 IN Thackrah, John S.  
 PA du Pont de Nemours, E. I., and Co.  
 SO U.S., 6 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 3744967	A	19730710	US 1971-127035	19710322
PRAI	US 1971-127035		19710322		

L5 ANSWER 24 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1973:59725 CAPLUS  
 DN 78:59725  
 TI Cellulose dyed while water swollen in a glycol bath with an



## anthrapyrimidine dye

IN Blackwell, John; Wilks, Edward Sherlock

PA du Pont de Nemours, E. I., and Co.

SO U.S., 8 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3707348	A	19721226	US 1971-157753	19710628
PRAI	US 1971-157753		19710628		

L5 ANSWER 25 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1972:527584 CAPLUS

DN 77:127584

TI Resinous microporous transfer structure

IN Virnelson, Robert Craig

PA Buckeye Ribbon and Carbon Co.

SO U.S., 4 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3682848	A	19720808	US 1970-30234	19700420
	BE 771651	A1	19711231	BE 1971-107335	19710823
PRAI	US 1970-30234		19700420		

L5 ANSWER 26 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1972:436253 CAPLUS

DN 77:36253

TI Cellulosic fiber-dyeing media

IN Neumer, John F.

PA du Pont de Nemours, E. I., and Co.

SO Ger. Offen., 29 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2146598	A	19720323	DE 1971-2146598	19710917
	US 3711245	A	19730116	US 1970-73664	19700918
	US 3794463	A	19740226	US 1972-278779	19720808
PRAI	US 1970-73664		19700918		

L5 ANSWER 27 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1972:421474 CAPLUS

DN 77:21474

TI Liquid preparations for dyeing or printing fibers or textiles

IN Baumann, Hans P.; Schaffner, Edouard; Sonderegger, Emil

PA Sandoz Ltd.

SO Ger. Offen., 29 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2143666	A	19720309	DE 1971-2143666	19710901
	CH 529257	A	19721015	CH 1970-529257	19700905
	AU 7133038	A1	19730308	AU 1971-33038	19710902

JP 49012152	B4	19740322	JP 1971-67806	19710902
FR 2107225	A5	19720505	FR 1971-31888	19710903
BR 7105824	A0	19730412	BR 1971-5824	19710903
ES 394768	A1	19740901	ES 1971-394768	19710903
BE 772896	A1	19720117	BE 1971-108414	19710921
PRAI CH 1970-13269		19700905		
CH 1971-10881		19710723		

seconds. After taking the article out of the solution, it is washed by water and dried. The article is uniformly colored in dark blue, retaining its high hardness and brightness. The state of surface is not changed by this coloring treatment even just after the coloring.

#### EXAMPLE 6

suberic acid	50% weight
ethylene glycol	14% weight
water	35% weight
dye belongs to blue group	1% weight

While keeping the coloring solution of above composition at the temperature of 68° C, some crystals can be seen in the solution. An extruded article of acrylate resin is dipped into said solution for 4 minutes. When the article is taken out of the solution, some crystals of suberic acid are attached on the surface of the article. After washing and drying, it was found that the article was colored in blue, retaining its high hardness and brightness of the surface of the resin and good transparency even just after the coloring. If the quantity of suberic acid is increased, the quantity of crystals attaching to the surface of the article is increased. This often causes the difficulty for after-treatment. Thus it is understood that solutions containing larger amounts of suberic acid are not suitable for industrial practical use but adequate for experimental purposes.

#### EXAMPLE 7

sebacic acid	1.3% weight
ethylene glycol	28.2% weight
water	69.3% weight
dye belongs to blue group	1.2% weight

Keeping the coloring solution of above composition at the temperature of 70° C, an extruded article of polyacetal resin is dipped into said solution for 1 minute. After taking the article out of the solution, it is washed by water and dried. The article is uniformly colored in blue, retaining its high hardness and brightness of the surface of the resin and good transparency even just after the coloring.

#### EXAMPLE 8

sebacic acid	1.0% weight
ethylene glycol	28.0% weight
water	70.0% weight
dye belongs to brown group	1.0% weight

Keeping the coloring solution of above composition at the temperature of 57° C, a sheet of metal plate is dipped into said solution for 30 seconds. The metal plate is previously coated with clear lacquer belonging to the cellulose derivative groups. After taking the coated plate out of the solution, it is washed by water and dried. The plate is uniformly colored in brown, the coating retaining its high hardness and brightness of the surface and good transparency even just after the coloring.

#### EXAMPLE 9

sebacic acid	1.7% weight
azelaic acid	1.7% weight
ethylene glycol	27.0% weight

-continued

water	67.9% weight
dye belongs to blue group	1.7% weight

Keeping the coloring solution of above composition at the temperature of 68° C, an extruded article of acrylate resin is dipped into said solution for 2 minutes. After taking the article out of the solution, it is washed by water and dried. The article is uniformly colored in blue, retaining its high hardness and the brightness of the surface of the resin and good transparency even just after the coloring.

#### EXAMPLE 10

sebacic acid	2.6% weight
ethylene glycol	13.7% weight
1,3-propanediol	13.7% weight
water	68.3% weight
dye belongs to blue group	1.7% weight

Keeping the coloring solution of above composition at the temperature of 68° C, an extruded article of acrylate resin is dipped into said solution for 4 minutes. After taking the article out of the solution, it is washed by water and is dried.

The article is uniformly colored in blue, retaining its high hardness and brightness of the surface of the resin and good transparency even just after the coloring.

#### EXAMPLE 11

sebacic acid	2.5% weight
azelaic acid	3.3% weight
ethylene glycol	13.2% weight
1,3-propanediol	13.2% weight
water	66.1% weight
dye belongs to blue group	1.7% weight

Keeping the coloring solution of above composition at the temperature of 68° C, an extruded article of acrylate resin is dipped into said solution for 3 minutes. After taking the article out of the solution, it is washed by water and dried. The article is uniformly colored in blue, retaining its high hardness and brightness of the surface of the resin and good transparency even just after the coloring.

Other synthetic resin, such as polyurethane resin, polyamide resin, polycarbonate resin, acrylonitrile-butadiene-styrene copolymer (ABS) resin, polyvinyl chloride resin, etc., are possible to color in a same way. It is also possible to color a resin film by dyes, of which the main component of the films are any of the above resins.

The color or tone is not limited by the kind of resin which is used as a base and other than colors disclosed in the embodiments, it may be colored in purple, orange, black etc.

The colored samples according to each Example were submitted to various tests such as rubbing test with cotton gauze and abrasion with rubber office eraser, dipping tests in artificial sweat, in a solution of three per cent salt, and in soap solutions. The color tone of each sample was not changed by these tests. Other colored samples were aged in storage rooms for 6 months, and they kept the same color condition without fading, color change, color irregularity and appearance of spots.

Polyacid according to this invention must be selected from the group of acids having normal straight chain linear molecules with carboxyl radical at the ends.

The preferable range of polyacid for the coloring treatment of this invention is from 0.1 weight percent to 50 weight percent of the treating solution. If the quantity of polyacid is less than 0.1 weight percent, the synthetic resin is not colored visually. If it is more than 50 weight percent, the surface of the resin is apt to be etched, and after-treatment becomes tedious and expensive owing to the presence of recrystallized polyacid on the surface. In case the number of "n" in chemical formula of polyacid is too low, (below 4) esterification reaction between polyacid and polyhydric alcohol is apt to begin, and the coloring ability becomes weak and the active life of the solution is shortened. The preferable range of polyhydric alcohol which dissolves polyacid is from 5 weight percent to 50 weight percent. The polyacids are difficultly soluble if the polyhydric alcohol concentration is less than 5 weight percent of the solution. Coloring reaction is disturbed in polyhydric alcohol more than 60 weight percent. Among the polyhydric alcohols; dihydric alcohols and trihydric alcohols are preferable, particularly dihydric alcohols are the best for practical use. In case the number of "m" in chemical formula of dihydric alcohol ( $\text{HO}(\text{CH}_2)_m\text{-OH}$ ) is too high ("m" is greater than 10), it is difficult to color synthetic resin. Monohydric alcohols are not suitable for practical use, because of their tendency to attack and swell the surface of the synthetic resin. There is no limitation about the quantity of dye included in the solution, but its range is generally from 1 weight percent to 3 weight percent for economic reasons.

According to the invention, the surface of synthetic resin is easily colored in a short time without damaging the surface. There is no need of special after-treatment except for washing and drying. It is possible to color in almost every color, such as red, orange, yellow, green, blue, purple, brown and black, etc. except white, and there is no limitation of color tone by the kinds of synthetic resin. The shade or intensity of the color is freely changeable by adjusting the coloring conditions such as dipping time, bath temperature and composition of the bath solution, and quantity and nature of dye. Since the dyes attach only on the surface of the resins and do not permeate into resins, the surface of the resins is not dissolved and the properties of the resins are not deteriorated.

According to the invention, the external appearance of the colored resin is not distinguishable from that of the resin in which ordinary dye is pre-mixed. It is also possible by this invention to color articles in such ways as; partial coloring; gradation coloring or in a pattern configuration by adjusting the application of the dye solution either in or out of bath treatment. The coloring solutions may be applied at elevated temperatures by padding spraying the articles with or without masks for patterned coloring.

There are three types of suitable dyestuff, such as Disperse Dyes, Acid Dyes and Cationic Dyes. Following list shows the name of dyes and their correspondence to Color Index. They all belong to Disperse Dyes and were used actually.

NAME OF DYES			COLOR INDEX
Sumikaron	Yellow	E-6GL	Disperse Yellow 51
Sumikaron	Yellow	S-R	

-continued

NAME OF DYES			COLOR INDEX
Sumikaron	Red	S-GG	
Sumikaron	Violet	E-2R1	
Sumikaron	Violet	RSL	Disperse Violet 23
Sumikaron	Blue	E-GRL	
Sumikaron	Blue	E-FBL	Disperse Blue 26
Sumikaron	Blue	S-2GL	
Sumikaron	Turquoise	S-GL	
Sumikaron	Blue		
Sumikaron	Yellow	S-2RL	
Sumikaron	Brown		
Sumikaron	Brown	S-5RL	
Sumikaron	Navy Blue	S-2GL	
Sumikaron	Black	S-BL	
Kayalon	Fast	Blue FN	Disperse Blue 3
Kayalon	Fast	Rubine B	Disperse Red 13
Kayalon	Fast	Blue Green B	Disperse Blue 7
Kayalon	Fast	Brown R	Disperse Orange 5
Kayalon	Polyester	Yellow YLF	
Kayalon	Polyester	Red Violet RSF	
Kayalon	Polyester	Blue GRF	Disperse Blue 97

Even if after storing the colored resins for a long time, the color condition is maintained without color change or color irregularity and the attached color, on the surface of resin, is not peeled off by washing or rubbing.

Since no chemicals having poisonous character and no organic solvents are used for coloring, there is no need to prepare special facilities such as solvent recovery and storage and no need for expensive vapor exhaust facilities. As a result it is also profitable from the point of anti-pollution countermeasure.

It is needless to say that the process to color the surface of resin according to this invention may easily be practical continuously by automatic equipment. While preferred embodiments of the invention have been shown and described it will be understood that many modifications and changes can be made within the true spirit and scope of the invention.

What is claimed is:

1. A coloring method for the surfaces of synthetic resin articles comprising, the step of heating an aqueous dye solution to a temperature less than the softening temperature of said resin; and applying the heated aqueous solution to the article to be colored; wherein said aqueous solution consisting, essentially of 0.1-50 weight percent of at least one polyacid having the chemical formula  $\text{HO}_2\text{C}(\text{CH}_2)_n\text{CO}_2\text{H}$  wherein n is integer of at least 4 and sufficient to inhibit esterification of said polyacid with polyhydric alcohol; 5-60 weight percent of at least one polyhydric alcohol and an effective quantity of a resin-substantive dye in water.

2. The coloring method for synthetic resins according to claim 1, wherein are at least one polyacid is selected from the group consisting of adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, dodecanedioic acid, brassylic acid and tetradecanedioic acid.

3. The coloring method for synthetic resins according to claim 1, wherein the polyhydric alcohols are selected from dihydric alcohols of the group consisting of ethylene glycol, propanediol, butanediol, pentanediol and hexanediol, and the group of trihydric alcohols including glycerin.

4. The coloring method for synthetic resin according to claim 1, therein the article is immersed in the aqueous solution said solution being heated to the temperature range from 50° C to 95° C for at least 30 seconds.

5. The coloring method for synthetic resin according to claim 1 wherein said heated aqueous solution is applied by contacting said solution in the desired areas.

6. The method according to claim 5 wherein the contacting is by spraying to the desired areas.

7. The method according to claim 6 wherein the spraying to the areas is controlled by masks.

8. The method according to claim 5 wherein the contacting is by padding in the desired areas.

9. A coloring method for articles comprising synthetic resins, which comprises the steps of maintaining an aqueous solution for coloring the synthetic resins at a temperature in the range 50° to 95° C, but below the

softening point of the resin components of said article, and contacting said heated solution with the resins in said article in the areas to be colored; wherein said aqueous solution consisting essentially of 1-15 weight percent of at least one polyacid having the chemical formula  $\text{HO}_2\text{CH}(\text{CH}_2)_n\text{CO}_2\text{H}$ , wherein "n" is an integer of at least 4; 25-30 weight percent of at least one polyhydric alcohol; and 1 to 3 weight percent of a resin-substantive dye, in water.

\* \* \* \* \*

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Enter a Chemical Name, CAS Number, Molecular Formula or Weight.

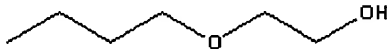
Use \* for partial names (e.g. ben\*).

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**2-Butoxy ethanol [111-76-2]**

Synonyms: 2-butoxy-1-ethanol; 2-Butoxy ethanol; monobutyl ether of ethylene glycol; monobutyl glycol ether; n-butoxyethanol; n-Butyl Cellosolve; poly-solv eb; 2-BUTOXY ETHANOL (ETHYLENE GLYCOL MONOBUTYL ETHER); o-butyl ethylene glycol; 2-n-Butoxy-1-ethanol; 2-n-Butoxyethanol; 3-oxa-1-heptanol; Beta-butoxyethanol; BUCS; butoxyethanol; Butyl cellosolve; butyl glycol; Butyl oxitol; Dowanol EB; Ektasolve EB; Ektasolve EB solvent; Ethylene glycol butyl ether; Ethylene glycol mono butyl ether; Ethylene glycol monobutyl ether (EGBE) (2-Butoxyet ; Ethylene Glycol Mono-n-butyl Ether; Ethylene glycol n-butyl ether; gafcol eb; glycol butyl ether; glycol ether eb; glycol ether eb acetate; Jeffersol EB;

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		ADD LINK		
CAS RN Lookup				
THE MERCK INDEX				
NCI DATABASE				

 Formula  $C_6H_{14}O_2$ 

Molecular Weight 118.1754

CAS RN 111-76-2

Melting Point (°C) -70

ACX Number X1001552-4

Boiling Point (°C) 171

Density 0.903

Vapor Density 4.1

Refractive Index

Vapor Pressure 0.98 mmHg @ 25C

Evaporation Rate

Water Solubility miscible.

Flash Point (°C) 61

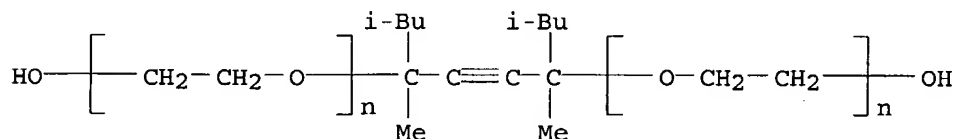
EPA Code

DOT Number UN 2369 Flammable Liquid

RTECS KJ8575000

Comments Colorless liquid with a mild odor. Miscibility agent.

L1 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN  
 RN 9014-85-1 REGISTRY  
 CN Poly(oxy-1,2-ethanediyl),  $\alpha,\alpha'$ -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ $\omega$ -hydroxy- (9CI) (CA INDEX NAME)  
 OTHER NAMES:  
 CN 2,4,7,9-Tetramethyl-5-decyne-4,7-diol-bispolyoxyethylene ether  
 CN 2,4,7,9-Tetramethyl-5-decyne-4,7-diol-ethylene oxide adduct  
 CN Acetinol EH  
 CN Acetylenol E  
 CN Acetylenol EH  
 CN Acetylenol EL  
 CN Ethoxylated 2,4,7,9-tetramethyl-5-decyne-4,7-diol  
 CN Ethylene oxide polymer ether with 2,4,7,9-tetramethyl-5-decyne-4,7-diol  
 CN Olfine E 1010  
 CN Polyethylene glycol ether with 1,4-diisobutyl-1,4-dimethylbutynediol  
 CN Polyethylene glycol ether with 2,4,7,9-tetramethyl-5-decyne-4,7-diol (2:1)  
 CN Surfynol  
 CN Surfynol 402  
 CN Surfynol 420  
 CN Surfynol 440  
 CN **Surfynol 465**  
 CN Surfynol 480  
 CN Surfynol 485  
 CN Surfynol E 1010  
 CN Surfynol SE-F  
 DR 126464-43-5, 58968-72-2, 105268-81-3, 37211-41-9, 37211-42-0, 155003-72-8, 80940-80-3, 159814-37-6, 195629-13-1, 204523-45-5, 297773-00-3  
 MF (C2 H4 O)n (C2 H4 O)n C14 H26 O2  
 CI PMS, COM  
 PCT Polyether  
 LC STN Files: BIOSIS, CA, CAPLUS, CASREACT, CEN, CHEMCATS, CHEMLIST, CIN, CSCHEM, IFICDB, IFIPAT, IFIUDB, MSDS-OHS, PIRA, PROMT, TOXCENTER, USPAT2, USPATFULL  
 Other Sources: DSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)  
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 RLD.P Roles for non-specific derivatives from patents: PREP (Preparation); USES (Uses)  
 RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); OCCU (Occurrence); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)  
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 896 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN  
RN 12707-52-7 REGISTRY  
CN Fluorad FC 431 (9CI) (CA INDEX NAME)  
OTHER NAMES:  
CN 3M FC 431  
CN FC-431  
ENTE A perfluoroalkyl group-containing polyethylene oxide surfactant (Sumitomo  
3M)  
MF Unspecified  
CI COM, MAN  
LC STN Files: CA, CAPLUS, TOXCENTER, USPAT2, USPATFULL  
DT.CA Caplus document type: Conference; Journal; Patent  
RL.P Roles from patents: BIOL (Biological study); PROC (Process); USES  
(Uses)  
RLD.P Roles for non-specific derivatives from patents: USES (Uses)  
RL.NP Roles from non-patents: ANST (Analytical study); PROC (Process); PRP  
(Properties); USES (Uses)  
  
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162 REFERENCES IN FILE CAPLUS (1907 TO DATE)